

2025-2026 SEPA Case Study Template

Date: 6/20/26

Your Name: Jennifer Roy

Your School: Pinkerton Academy

Grade Level(s): 11-12

Course(s) Taught: Field Biology

Number of Students Involved (Total): 24

Name of your scientist partner and their institution, and any other partners (other partners can include, but are not limited to, collaborations within the school, community groups, non-profit organizations such as the YMCA, or stand out family or friend mentors that helped your project succeed): Matt Young

Teacher Profile: A brief biography of yourself. How long have you been teaching? What did you study in school? What are you passionate about inside and outside the classroom? Why are you interested in the All About Arsenic+ project? How long have you been participating in SEPA and how were you recruited to participate?

I have been a high school teacher for 34 years, with a major in Environmental Conservation. I love my job, and I love the outdoors. The All About Arsenic+ project gives my students real research with real impacts on our local environment and residents. This is my first year with the project, another teacher in another department retired and I took over the study.

Abstract: Provide a 500-word summary of your project. Describe the **curriculum**. How was drinking water sampling, **data analysis**, and **science communication** integrated into that curriculum? Provide specifics (number of samples collected, what the samples were analyzed for, how Tuva was used, what opportunities students had to talk about their data through some public outreach, etc...). Did students use the **Science Communication Toolkit** and/or Solutionaries Framework to prepare for this outreach event or guide their participation in SEPA this school year? Did students participate in an **Intergenerational Learning** activity (pH exercise etc.)? Please include anecdotes or stories in this section!

The class started out with learning about arsenic. We made a class slide show that got into how arsenic gets into groundwater that could be used as a reference for the rest of the semester, and shared with others.

Each student that participated (we had a total of 24 samples) made their sampling kit and brought it to the site of sampling. In the kit also included a pH strip for sampling for intergenerational learning, so students could show the recipient that not all tests can be visible by just looking at water, and not all tests can be done "at home" as the levels are so precise.

When the sample was returned, I entered the information into the spreadsheet as I was concerned about time and correctness.

Later in the semester, when the samples had been processed, we spent a period on TUVA - playing with the software to make them familiar with it. Students were then told to keep playing until they found something they felt was worthy of letting others know about, some result that was off. It could have been locally or for the entire state, there were no boundaries.

Once they decided on a project, they completed a modified science communication toolkit/solutionaries framework to help prepare their PSA/outreach. They had to reach out to locations they wanted to send their results to-be it a phone call or an email. (library, schools, grocery stores, etc),and then made their PSA. Their PSA was then sent/hung up/shared with the recipients. Between all of the projects, I would guess that approx 500 people were exposed to their results in their various locations. There was no time to hear feedback back from the recipients as school ended.

Details

Did you...

	No	Yes	Where appropriate, how many?
Collaborate with your Scientist Partner? - If so, how?	☐	☒ yes	2 times via email and one time after the project via zoom to talk about next year
Use the Science Communication Toolkit? - If so, how?	☐	☒ yes	To help figure out how to reach out to others
Use the Solutionaries Framework? - If so, how?	☐	☒ yes	To make a plan of action
Use any Intergenerational Activities? - If so, how?	☐	☒ yes	To test for pH to get conversation started
Collaborate with any other teachers in your school? - If so, who and what do they teach?	☒ no	☐	_____

Conduct any experiments? - If so, what kinds of questions did students ask?	☐ no	☐	My scientist partner did, we just ran out of time to have the results shared
Go on any field trips? - If so, where and why?	☐ no	☐	_____
Have any guests visit your classroom? How many? - Who and why? What did the guest do?	☐ no	☐	_____
Have a Community Meeting? - If so, where was it, what did the students do, how many people attended, etc...?	☐ no	☐	_____
Have other Outreach Events? - If so, where were they, what did the students do, how many people attended, etc...?	☐ no	☐	Not "events" but more posters, letters, fliers and pamphlets that went to various parts of the state of NH
Use your classroom award to purchase anything for your classroom? - If so, what, and how did you use it?	☐	☐ yes	\$500 Purchased collection tubes and all of the items associated with the water collecting, pH paper, copying paper, pamphlet paper, poster paper, markers (etc), a filter bottle, organizational items, packaging materials and

			used for shipping costs
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Describe the student, or group of students, whose work most exemplified the All About Arsenic+ project this school year. What were they excited about? How did that facilitate their learning? Please include anecdotes and stories here.

I had one student that worked by herself and wanted to share her concerns about the amount of arsenic in Merrimack County. She reached out to two grocery stores to see if she could send them fliers to put in their displays when people enter the stores as well as put fliers in the breakrooms, and also reached out to a local library to see if pamphlets could go there as well. On top of the fliers, she also made a slideshow containing more information, if people wanted it. She was excited to share out what she had learned and was genuinely concerned about the public's health and wanted them to understand the potential dangers of their well water. Reaching out to the grocery stores and library was also powerful, as it is not something typical high school students do or are comfortable with and was so happy they all were so accomadating.

I had another student concerned about local arsenic and made posters to hang up in our school. She had to meet with an administrator to get permission to hang up the fliers, which she was very nervous about. But she was able to answer all of the administrator's questions as she had participated in making the class slide show. Her poster had a QR code that could be scanned, which brought them to a site to give their information to win a filtering water bottle. She had to learn how to make a poster that would capture a high school student's interest, and how to make a QR code to win the bottle, but most importantly, she had the experience of advocating the importance of her poster/researach.

Reflect on your students' primary learning outcomes/gains with reference to data literacy, science communication, and using data visualizations in communication. What are they getting out of their involvement in this project? Please include anecdotes and stories here.

-How to "read" data on a graph: Students were overwhelmed at first with all of the data on TUVA, but with playing with it, they were able to break it into manageable chunks and see trends or problems

-Contacting adults: Many students reached out to other adults at other places (libraries, schools, grocery stores,etc), so learning how to type up a more "professional" email, or how to address an envelope was a first time experience for many of them.

-Data visualization in communication: Students had to include a graph in their literature, most which copied it from TUVA. They had to come up with a title that explained what the graph was about, and be able to summarize the findings to a real life situation

If you are a teacher who has participated in both SEPA grants, how have you shifted your teaching to include the additional goals of science communication and intergenerational learning?

My students tested the pH of their water when they collected the water sample, being able to have conversations with the other adults as to why we are testing water in the first place. Then they shared out their results in a manner that made sense to their findings.

How did you use our Tuva drinking water dataset? Did you use the Tuva software for teaching, was it a tool students used to create data visualizations? What about other Tuva data activities? Did you use them in your teaching? Did students build skills using those activities? Please include stories that illustrate students understanding the link between data visualization and literacy and science communication. If you are a teacher who has participated in both SEPA grants, how have you shifted your data literacy focus to include this grant's science communication goal?

-We used TUVa to look for items in the data that were concerning. When students first opened TUVa, they were overwhelmed, but I had an activity that systematically had them adjust different settings so they could see how to organize the data. After about 15-20 minutes, I told them to then "play" with the data until they found something concerning that they would like others to know about. Students spend about an hour playing with the data to come up with something they wanted to share with others. I did not do any of the other TUVa activities.

What challenges did your students have with Tuva, the website, the datasheet, Anecdota, anything related to the project process.

TUVA - overall very happy with it. Did not see that it had titles for the graphs and did not see a "reset" button for when kids couldn't remember what they changed (they would log out and log back in instead)

There were no challenges with anything else, but since I entered the data there exposure was limited.

If you did not use Tuva this year, how did you analyze drinking water data? Please explain why you did not use Tuva. What challenges and successes did students experience with your chosen data analysis/visualization tool?

How did you enhance *your own* Data Visualization and Science Communication skills, as an educator or scientist partner? *I made my own checklist for this - it is attached below*

Science Communication Outreach

What kinds of science communication outreach products did your students produce?

Some students made fliers that were hung up in our school.

Some students contacted other communities (libraries, schools, grocery stores) that was the focus of their results and they were sent fliers or trifold

Some students contacted legislatures by email to try and have testing change occur.

One student made a video to go onto his facebook page to be shared with friends and family

Did your students work with the Science Communication Toolkit this year?

Yes

If yes, please describe how it went. What worked best? What improvements could be made?

Please include anecdotes or stories here. If you did not use the Science Communication Toolkit, why not? What other resources and activities did you use to teach or facilitate science communication? Did the science communication skill building inspire outreach or build capacity in your students in ways not directly associated with the SEPA project?

I used a modified version of the science communication toolkit. It definitely helped them narrow down exactly what they were going to do for their outreach project. One group thought they knew exactly what they were going to do and "didn't need" to do toolkit I had, but when using it, they realized they hadn't thought through the entire process completely and were glad they had it to help tease out the details.

Don't forget to add all final student products to your teacher folder on the shared google folder! (Feel free to add additional products that led to the final products. Simply create a separate folder under your teacher folder.)

Intergenerational Learning

Did you send an intergenerational activity home to parents? **Yes**

If yes, please describe the activity. What are stories and anecdotes you can include about student participation in intergenerational learning activities?

I included pH paper with a short form to be gone over when their water was collected. Most students completed it, but not all. Students found it was a talking point for why they were testing water, but did not feel it enriched anything. But, perhaps it was the talking point that was important, as it gave them an opportunity to talk to another person about what they were doing and seeing tangible results with the pH test very quickly and easily.

If no, please describe why. What other resources or activities did you use to teach about or facilitate intergenerational learning?

What worked best? What improvements could be made?

Did the intergenerational activity go home at the same time as the drinking water samples? **Yes**

What feedback did you hear about the activity? **See above**

Solutionaries Framework

Did you use the Solutionaries Framework in your class? **Yes**

If yes, please describe.

What worked best? What improvements could be made?

If no, why not? Please include other activities or resources you used to teach about or facilitate systems thinking, place-based discovery, or project-based learning.

I modified this with the Communications Outreach to come up with a form for students to fill in once they picked an area of concern.

Did you attend the Institute for Humane Education series on the solutionaries framework in your class? **NO**

Which aspects of this Communicating Data project will you repeat next year?

I will continue to have students research potential hazards, look at the data to determine a point of concern, and come up with a PSA.

Which aspects of this project will you change next year?

Instead of just focusing on arsenic at the beginning of the semester, I will have pairs of students work together to make a slide show of ALL of the items tested in the water samples. By just focusing on arsenic, when results came back that were out of the acceptable range, if a student picked an area that was not arsenic, they had a lot of research to do in order to make their outreach project/PSA.

I also think some students need a little more guidance with selecting a topic of concern they would like to focus on. When I came around at the end of the period to collect their communications guide form, some students did not have it filled in as they didn't know how to narrow down the data. For students that struggle with the open endedness of this project, I think having a list of 5 things they could do might be helpful.

I had no idea that students did not know how to address an envelop or reach out to someone they wanted to send their results to. I will work on a template for the "reaching out" part, and will have a quick conversation with students that need to mail out their flyers before I waste envelopes.

I need to tweak the rubric I made as well as I wasn't really sure what I was going to be looking for, this needs to go to students beforehand.

List and describe the resources that helped your students the most this year.

The below items were either shown to students or available to students during various stages of this unit.

RESEARCH LINKS USED::

[Arsenic video](#) - 5 things to know about arsenic in drinking water

[NHPR](#)

[NHDES Fact Sheet](#).

[Be well informed guide](#)

[Arsenic maps](#)

[W.H.O. arsenic](#)

[EPA](#) - drinking water arsenic

COMMUNICATION LINKS USED

Example of project [Video](#) (based out of a school in Maine)

2025 Bow Student [Video](#)

2025 Bow Student [video](#)

COMMUNICATION LINKS AVAILABLE

[Poster, Trifold or Brochure Checklist](#)

[Letter to the editor \(science Op-Ed\)](#)

[Science storytelling](#) (story discussed is [here](#) - begin at 7:00)

[Video planning sheet](#) [Video production and Editing info](#)

[Data to action toolkit](#) - has lots of links to help you get started on your PSA

[Well water community action toolkit](#) - has some good general info and statistics

[Community presentation wksht](#) - how to make a presentation to be delivered in your community

[Solutionary project exm](#) - a way to organize yourself

Provide a list, and links, if applicable, to specific curricular items such as online worksheets, articles, books, YouTube videos, and labs.

*Below are items that **I made** to help organize the unit - most need modifying after going through this project for the first time*

[What will we be doing for this unit?](#)

[Intro to arsenic](#) (Is arsenic in NHs water supply a problem) student made [slideshow](#)

[Communicating findings](#)

[Rubric](#)

[TUVA graphing instructions](#)

Add addendums such as stories and anecdotes, photos, student assessments, testimonials from parents/students, etc.

I will be posting student examples on the case study page so you can see examples of student work

Acknowledgments: The work reported in this publication was supported by the National Institute of Nursing Research of the National Institutes of Health under Award Number **1R25NR021077**. The content is solely the responsibility of the authors and does not necessarily

represent the official views of the National Institutes of Health. [Acknowledge any other sources of support/funding/people or organizations involved and explain their role]